State-listed Mammals

Water Shrew (*Sorex palustris*, State Special Concern)

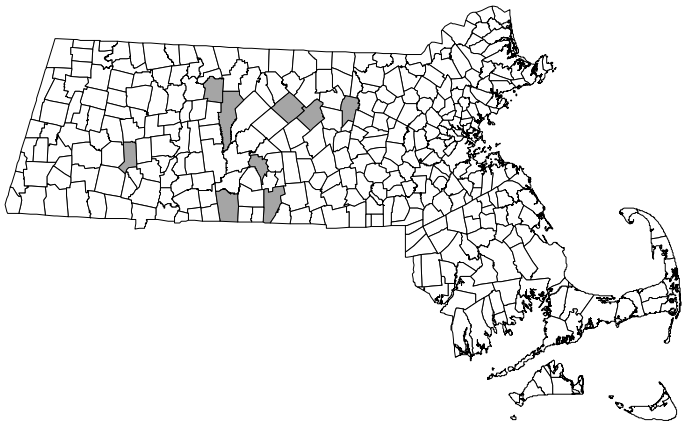
Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G5	S3	Vernal Pools, Lakes & Ponds, Forested Swamps, Marshes & Wet Meadows	State List; NE F&W Agencies

Species Description

The Water Shrew is the largest long-tailed shrew in New England. It measures 144-158 mm (5.7-6.2 in) in length, with its long tail accounting for more than half of its total length; and weighs from 10-16 g (approximately 1/3 oz). The unique feature of the Water Shrew is its big "feathered" hind feet. The third and fourth toes of the Water Shrew's hind feet are slightly webbed, and all toes as well as the foot itself have conspicuous stiff hairs along the sides. In winter, the Water Shrew is glossy, gray-black above tipped with silver, and silvery-buff below, becoming lighter on the throat and chin. It has whitish hands and feet, and a long, bicolored tail covered with short, brown bristles. In summer, its fur is more brownish above and slightly paler below, with a less frosted appearance. The body of the Water Shrew is slender with a long, narrow snout. Its eyes are minute but visible, and its ears are small and hidden in velvety fur. This species is especially adapted for semiaquatic life. Not only are the large webbed hind feet an adaptation for aquatic living, but the fur of the Water Shrew is so dense that it is impenetrable by water and serves to trap air bubbles. The Water Shrew can remain submerged for about 15 seconds but only while swimming vigorously, as the air trapped in the fur makes it as buoyant as a cork.

Distribution and Abundance

There are nine documented current occurrences of Water Shrew in Massachusetts (NHESP database, accessed December, 2004).



Massachusetts Towns with Current Occurrences of Water Shrew

Habitat Description

The Water Shrew is seldom found more than a few yards from the nearest water - a spring, a mountain lake, or, most commonly, the banks of a swift, rocky stream, usually near boreal or mixed forest. It prefers heavily wooded areas and is rarely found in marshes that are devoid of bushes and trees. It may be found in beaver lodges and muskrat houses in winter.

Threats

Current threats to the Water Shrew are many: fragmentation of suitable habitat; warming and siltation of headwater streams and ponds resulting from logging, clearing for agriculture, and road-building; acid rain and its effects on the

forests and waters that provide the shrew's habitat and food supply; loss of wetland habitat; and potentially, the introduction of new predators such as smallmouth and largemouth bass.

Rock Shrew (*Sorex dispar*, State Special Concern)

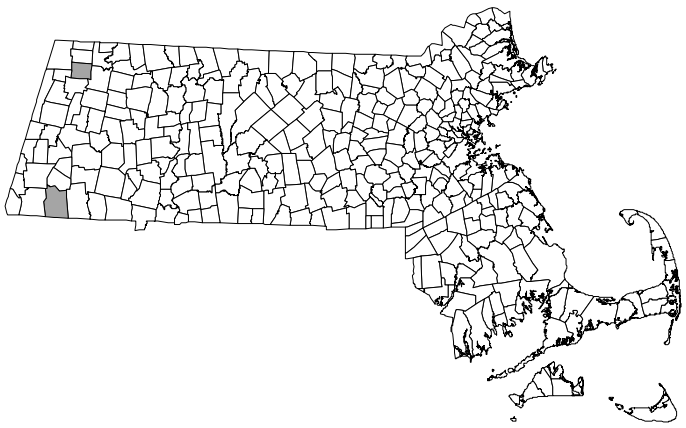
Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G4	S3	Rock Cliffs/ Ridgetops/Talus Slopes	State List

Species Description

The Rock Shrew is a large, dull gray-black shrew with nearly uniform coloration in all seasons. The tail is indistinctly bicolored, black above and usually paler below; and is long, sparsely haired, and rather heavy and ropelike in appearance. The body of the Rock Shrew is slender, and the snout is long, slender, and highly movable, with conspicuous vibrissae. The eyes are minute but visible, and the ears usually project slightly above the fur. The skull is long, narrow, and flattened, with distinctive dentition. Measurements range from 101–139 mm (3.9–5.3 in) in overall length; the tail is 50–60 mm (2.0–2.3 in) of that overall length. Weights vary from 4-6 g (0.14–0.21 oz).

Distribution and Abundance

There are two documented current occurrences of Rock Shrew in Massachusetts (NHESP database, accessed December, 2004).



Massachusetts Towns with Current Occurrences of Rock Shrew

Habitat Description

The Rock Shrew prefers cold, deep, damp coniferous forests, particularly old-growth forest with hemlock or spruce, in boreal pockets at altitudes as high as 6,000 ft. It is found in depressions of moist moss-covered logs, in crevices of large mossy rock piles, among shaded, wooded rock slides or talus, just beneath low, shaded cliffs, and at the edges of moist grassy clearings surrounded by swampy woods. Occasionally the Rock Shrew occurs in much drier spots, but almost invariably it is associated with rock crevices and talus slopes.

Threats

Currently, there appears to be no immediate threat to the habitat of the Rock Shrew. Building roads may have the only possible effect on the Rock Shrew, but it is believed that this will have no major impact on the populations. Specific management recommendations are to protect streams and moist rocky hillsides at the higher elevations.

Indiana Myotis (*Myotis sodalis*, State Endangered, Federal Endangered)

Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G2	SH	Bat Hibernacula	Federal List; State List; Globally Rare

Species Description

The Indiana Myotis is a small bat, very similar to the Little Brown Bat, *Myostis lucifugus*. Indiana Bats weigh between 5 and 11 grams and measure about 80 mm in total length, with a wingspread of 240 to 267 mm. They have uniformly pinkish-brown fur.

Distribution and Abundance

There are no current documented current occurrences of Indiana Myotis in Massachusetts. Historic records in Massachusetts are from the towns of Chester, Egremont, Sturbridge, and Worcester (NHESP database, accessed December, 2004). Note that the species identification of some of these records is in doubt and no specimens of *Myotis sodalis* from Massachusetts currently exist.

Habitat Description

The hibernacula used by Indiana Myotis in Massachusetts historically are abandoned mines, with deep shafts. In summer, they roost in small colonies in wooded areas, usually under the dead bark of trees.

Threats

Suitable hibernacula still exist in Massachusetts for Indiana Myotis; however, the species has not been seen in the state since 1939. Elsewhere in its range, the Indiana Myotis is threatened by disturbances during overwintering, destruction of hibernacula, and declines in populations of prey species. Because this species hibernates in a very few hibernacula range-wide, any disturbance during hibernation is likely to affect a sizeable percentage of the entire species.

References

Whitaker, J. O., Jr., and W. J. Hamilton, Jr. 1998. *Mammals of the Eastern United States*. Third edition. Comstock Publishing Associates, Ithaca, New York.

Eastern Small-footed Bat (*Myotis leibii*, State Special Concern)

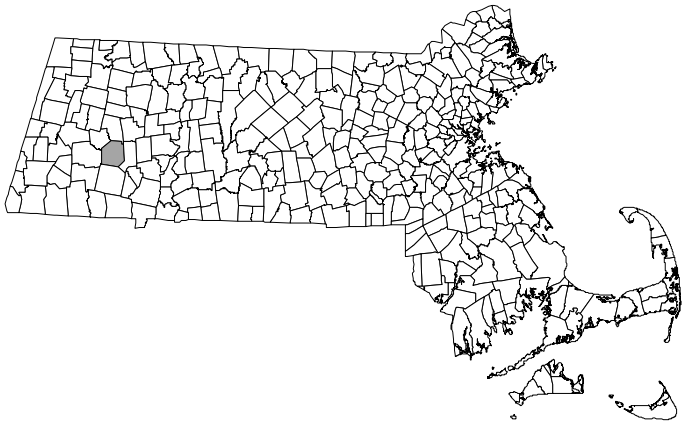
Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G3	S1	Bat Hibernacula	State List; Globally Rare; NE F&W Agencies

Species Description

The Eastern Small-footed Bat is the smallest member of its genus in eastern North America, with the forearm measuring only 1.25 to 1.5 inches. It has golden-tinted, almost yellowish fur and relatively short pinkish forearms. It is recognized by the black facial mask, black ears, long-keeled calcar, and the absence of a dark shoulder patch. When the ears are laid forward, they extend slightly beyond the nose.

Distribution and Abundance

There are two documented current occurrences of Eastern Small-footed Bat in Massachusetts (NHESP database, accessed December, 2004).



Massachusetts Towns with Current Occurrences of Eastern Small-footed Bat

Habitat Description

Buildings seem to provide suitable places for shelter in summer. In winter, the species is found in caves and mines. In Massachusetts, it is restricted to caves in the foothills of mountains rising to 2,000 feet, with hemlock, spruce, and white cedar predominating among the conifers.

Threats

The Eastern Small-footed Bat is threatened largely by disturbances during hibernation, resulting in overwintering mortality.

Southern Bog Lemming (*Synaptomys cooperi*, State Special Concern)

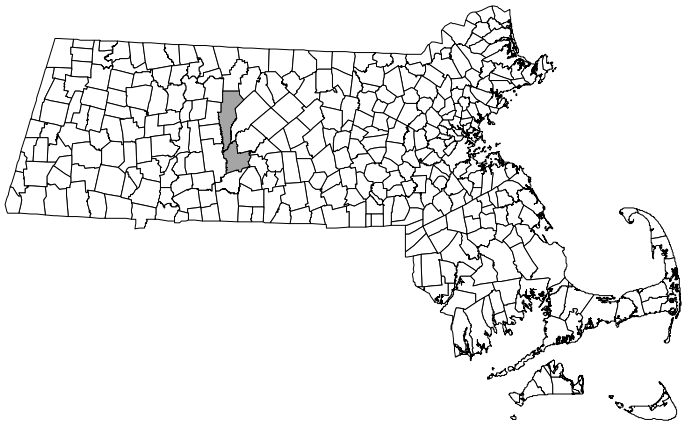
Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G5	S2	Peatlands, Grasslands, Early Successional Forest	State List

Species Description

The Southern Bog Lemming is a small, chunky rodent, with small eyes and ears that are nearly concealed in the long, loose, shaggy fur. The skull is broad, and the short rostrum gives this species an abrupt profile. This species is can be distinguished from other small mammals by the combination of its short tail (only slightly longer than its hind foot) and grooved upper incisors. The sexes are colored alike, with no apparent seasonal variation. The adult fur is brown to chestnut above, with a grizzled appearance. The sides and underparts are silvery, with no sharp line of demarcation on the sides. The tail is indistinctly bicolored, brownish above and whitish below. The feet are brownish black. Southern Bog Lemmings range in total length range from 11.5–13.5 cm (4.5-5.3 in), of which the tail is 1.8–2.4 cm (0.7-0.9 in). Weights vary from 20-40 g (0.7-1.4 oz).

Distribution and Abundance

There are six documented current occurrences of Southern Bog Lemming in Massachusetts (NHESP database, accessed December, 2004). Historically, the Southern Bog Lemming apparently has always been extremely rare in Massachusetts. Records show that prior to 1980, six individual sightings were documented from five different towns (Belchertown, Dunstable, Lunenburg, Plymouth, and Wareham). Since 1980, there have been four verified sightings in two towns (New Salem and Ware, shown on the map below) reported to NHESP.



Massachusetts Towns with Current Occurrences of Southern Bog Lemming

Habitat Description

The common name Bog Lemming is misleading when attempting to locate the favored habitat of this elusive microtine. Its habitat is highly variable, comprised of bogs, especially with sphagnum, sedge meadows in old-growth forest, clear-cuts in forests, open grasslands, orchards, post-fire successional communities, and even cornfields.

Threats

The greatest threat to the Southern Bog Lemming is destruction of its habitat. Woodland vernal pools, sedge meadows, and wooded wetlands need to be protected at known locations of this species. Populations of the Southern Bog Lemming are small and isolated. Every effort should be made to protect these populations as natural recolonization will be difficult if a local population goes extinct.

Sperm Whale (*Physeter catodon*, State Endangered, Federal Endangered)

Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G3G4	S1	Open Ocean	Federal List; State List; Globally Rare

Species Description

Unlike most of the whales found in Massachusetts waters, the Sperm Whale is a toothed whale. Males commonly reach a length of 50 feet, while females are considerably smaller, up to 35 or 40 feet long. Sperm Whales have enormous, blocky heads, with a shorter, narrow jaw underneath. The single blowhole is on the left side of the front of the head.

Distribution and Abundance

Data on specific locations of oceanic animals are not recorded by NHESP. Sperm Whales are exceedinly rare in Massachusetts waters.

Habitat Description

Sperm Whales are generally found in deep, relatively warm water at the edge of the continental shelf and further offshore. It is rare that one approaches landward over the continental shelf.

Threats

As for most whales in Massachusetts waters, current threats to Sperm Whales include entanglement in fishing gear or nets, collisions with ships, declining prey stocks, oil spills, ingestion of plastic bags and other debris, and the generalized effects of oceanic pollution.

References

Katona, S. K., V. Rough, and D. T. Richardson. 1993. *A Field Guide to Whales, Porpoises, and Seals from Cape Cod to Newfoundland*. Smithsonian Institution Press, Washington, D.C.

Fin Whale (*Balaenoptera physalus*, State Endangered, Federal Endangered)

Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G3G4	S1S2	Open Ocean	Federal List; State List; Globally Rare

Species Description
Fin Whales are the most common large baleen whales found off Massachusetts. The coloration of the jaws, baleen, and belly is asymmetrical: on the right, the lips, anterior baleen, and lateral side of the belly are white or light colored; these areas are dark on the left side. Mature Fin Whales are up to about 60 feet long.

Distribution and Abundance
Data on specific locations of oceanic animals are not recorded by NHESP. Fin Whales are most common in Massachusetts waters from April to October, but occasionally a few individuals overwinter.

Habitat Description
Fin Whales inhabit the cool ocean waters over the continental shelf, occasionally coming near the coastline.

Threats
As for most whales in Massachusetts waters, current threats to Fin Whales include entanglement in fishing gear or nets, collisions with ships, declining prey stocks, oil spills, ingestion of plastic bags and other debris, and the generalized effects of oceanic pollution.

References
Katona, S. K., V. Rough, and D. T. Richardson. 1993. *A Field Guide to Whales, Porpoises, and Seals from Cape Cod to Newfoundland*. Smithsonian Institution Press, Washington, D.C.

Sei Whale (*Balaenoptera borealis*, State Endangered, Federal Endangered)

Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G3	S1S2	Open Ocean	Federal List; State List; Globally Rare

Species Description
A medium-sized baleen whale, Sei Whales are up to 50 feet long. Sei Whales are dark above, light below, sometimes with light-colored, oblong spots on the sides.

Distribution and Abundance
Data on specific locations of oceanic animals are not recorded by NHESP. Sei Whales are seldom seen in Massachusetts waters.

Habitat Description
Sei Whales seem to prefer the warmer waters at the edge of the continental shelf and beyond into open ocean.

Threats
As for most whales in Massachusetts waters, current threats to Sei Whales include entanglement in fishing gear or nets, collisions with ships, declining prey stocks, oil spills, ingestion of plastic bags and other debris, and the generalized effects of oceanic pollution.

References
Katona, S. K., V. Rough, and D. T. Richardson. 1993. *A Field Guide to Whales, Porpoises, and Seals from Cape Cod to Newfoundland*. Smithsonian Institution Press, Washington, D.C.

Blue Whale (*Balaenoptera musculus*, State Endangered, Federal Endangered)

Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G3G4	S1	Open Ocean	Federal List; State List; Globally Rare

Species Description
A very large baleen whale, Blue Whales are as much as 85 feet or more in length and can weigh up to 100 tons. Blue Whales are indeed blue-gray, with irregular light spotting. The blowhole is protected by a raised ridge anterior to the blowhole.

Distribution and Abundance
Data on specific locations of oceanic animals are not recorded by NHESP. Blue Whales are exceedingly rare in Massachusetts waters.

Habitat Description
Blue Whales prefer very cold ocean waters and are usually found farther north than the Massachusetts coast.

Threats
As for most whales in Massachusetts waters, current threats to Blue Whales include entanglement in fishing gear or nets, collisions with ships, declining prey stocks, oil spills, ingestion of plastic bags and other debris, and the generalized effects of oceanic pollution.

References
Katona, S. K., V. Rough, and D. T. Richardson. 1993. *A Field Guide to Whales, Porpoises, and Seals from Cape Cod to Newfoundland*. Smithsonian Institution Press, Washington, D.C.

Humpback Whale (*Scientific Name*, State Endangered, Federal Endangered)

Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G3	S1S2	Open Ocean	Federal List; State List; Globally Rare

Species Description

The Humpback Whale is a medium-sized baleen whale. The humpback is a rather bulky and stout whale, ranging from 30 to 60 feet in length and weighing 23 to 30 tons. Females tend to be larger than males. The whale's flippers are white and very long, almost one-third of its body length. "Knob-like" protuberances on their head, snout, and flippers containing vestigial hair follicles are one of the characteristics that distinguish the humpback from other whales. Another defining characteristic of the humpback is its pear-shaped, double blowhole. Their dorsal fins are relatively small, varying in size and shape.

Distribution and Abundance

Data on specific locations of oceanic animals are not recorded by NHESP. Humpbacks can be found feeding off the Massachusetts coast from spring through fall, especially on Jefferys Ledge and Stellwagon Bank.

Habitat Description

Humpback Whales feed in the relatively cool ocean over the continental shelf, and are often seen hunting over Jefferys Ledge or Stellwagon Bank.

Threats

Humpback Whales are threatened by entanglements with fishing gear, pollution, and collisions with boats. Contributing factors to the mortality of calves include predation, red-tide toxins, and ice entrapment. The greatest cause of natural mortality among calves is attacks by killer whales (*Orcinus orca*) and sharks.

References

Katona, S. K., V. Rough, and D. T. Richardson. 1993. *A Field Guide to Whales, Porpoises, and Seals from Cape Cod to Newfoundland*. Smithsonian Institution Press, Washington, D.C.

Northern Right Whale (*Eubalaena glacialis*, State Endangered, Federal Endangered)

Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G1	S1S2	Open Ocean	Federal List; State List; Globally Rare

Species Description
A medium-sized baleen whale, Northern Right Whales grow up to 50 feet in length can weigh up to 50 tons. There is no dorsal fin. The body is darkly mottled, with light-colored growths (callosities) on the enormous head.

Distribution and Abundance
Data on specific locations of oceanic animals are not recorded by NHESP. In Massachusetts waters, Northern Right Whales are seen in Cape Cod Bay, on Stellwagon Bank, and off Cape Ann, in late winter to spring, and again in the fall.

Habitat Description
Northern Right Whales inhabit the relatively cool water over the continental shelf and are occasionally seen near shore.

Threats
As for most whales in Massachusetts waters, current threats to Northern Right Whales include entanglement in fishing gear or nets, collisions with ships, declining prey stocks, oil spills, ingestion of plastic bags and other debris, and the generalized effects of oceanic pollution.

References
Katona, S. K., V. Rough, and D. T. Richardson. 1993. *A Field Guide to Whales, Porpoises, and Seals from Cape Cod to Newfoundland*. Smithsonian Institution Press, Washington, D.C.

Bats – not state-listed

Silver-haired Bat (*Lasionycteris noctivagans,* no status)

Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G5	SU	Upland Forest	NE F&W Agencies

Species Description
The fur of Silver-haired Bats is dark blackish-brown to brown, with the tips of the hairs on the back tipped with silver. Total length is about 100 mm; weight is about 10.5 grams. The sexes are alike.

Distribution and Abundance
Data on specific locations of Silver-haired Bat are not recorded by NHESP. Silver-haired Bats do not hibernate in Massachusetts; they are only known from the state during the summer and migration. Silver-haired Bats have not been documented breeding in Massachusetts (Cardoza et al. in prep.). Whitaker and Hamilton (1998) note that only females migrate north from the wintering grounds. This would indicate that Silver-haired Bats found in Massachusetts are likely to be mostly females and young of the year. Cardoza et al. (in prep.) note that Silver-haired Bats are the most uncommon tree bat in the state, with records from only 15 of the 351 municipalities.

Habitat Description
Silver-haired Bats in Massachusetts inhabit forests, particularly along rivers and lakes, over which they hunt. They often roost solitarily in hollow trees, crevices in rocks and cliffs, and under loose bark, but females and their young may form small maternity colonies in the same kinds of roost sites.

Threats
As for most bats, Silver-haired Bats are threatened by the precipitous decline in larger moths due to parasitism by *Compsilura*. Other threats include declines in other prey species, due to insecticide spraying or prey species habitat destruction, and outright destruction of bat habitat, due to conversion to development, intensive logging, or agriculture.

References
Cardoza, J. E., G. S. Jones, and T. W. French. In prep. Distribution and status of bats in Massachusetts, USA.

Whitaker, J. O., Jr., and W. J. Hamilton, Jr. 1998. *Mammals of the Eastern United States*. Third edition. Comstock Publishing Associates, Ithaca, New York.

Eastern Red Bat (*Lasiurus borealis*, no status)

Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G5	S4	Upland Forest	NE F&W Agencies

Species Description

Eastern Red Bats have reddish or rusty-colored fur, with white-tipped hairs on their backs and breasts. Males have a bright brick red fur, while females have duller, buffy-chestnut fur, with much more white tipping of the fur than males do. Total length is about 112mm; the weight ranges from 9.5 to 16 grams.

Distribution and Abundance

Data on specific locations of Eastern Red Bat are not recorded by NHESP. Eastern Red Bats do not hibernate in Massachusetts; they are only known from the state during the summer and migration. The only breeding records for this species are historical (Cardoza et al. in prep.). It has been recorded from all 14 counties and from 52 of the 351 municipalities (Cardoza et al. in prep.).

Habitat Description

Eastern Red Bats are forest-dwellers in Massachusetts, although they may be seen feeding over water or at lights. Roosting is solitary, usually in thickly leafed parts of trees or other vegetation.

Threats

As for most bats, Eastern Red Bats are threatened by the precipitous decline in larger moths due to parasitism by *Compsilura*. Other threats include declines in other prey species, due to insecticide spraying or prey species habitat destruction, and outright destruction of bat habitat, due to conversion to development, intensive logging, or agriculture.

References

Cardoza, J. E., G. S. Jones, and T. W. French. In prep. Distribution and status of bats in Massachusetts, USA.

Whitaker, J. O., Jr., and W. J. Hamilton, Jr. 1998. *Mammals of the Eastern United States*. Third edition. Comstock Publishing Associates, Ithaca, New York.

Hoary Bat (*Lasiurus cinereus*, no status)

Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G5	SU	Upland Forest	NE F&W Agencies

Species Description
The Hoary Bat is the largest bat found in Massachusetts, up to 134 mm in total length and 18 to 38 grams in weight. Females are heavier than males. The fur of Hoary Bats is yellowish-brown to dark mahogany brown, each hair tipped with silver.

Distribution and Abundance
Data on specific locations of Hoary Bat are not recorded by NHESP. Hoary Bats do not hibernate in Massachusetts; they are only known from the state during the summer and migration. In large part, Hoary Bats only migrate through Massachusetts; apparently, few individuals spend the summer. There are two recent breeding records (Cardoza et al. in prep.). As for Silver-haired Bat, it is mostly female Hoary Bats that migrate. Thus, it is likely that most Hoary Bats found in Massachusetts are females or young of the year of both sexes. Cardoza et al. (in prep.) found records of Hoary Bats in 25 of 351 municipalities, from 12 of the 14 counties.

Habitat Description
Hoary Bats are forest-dwellers, but can be seen hunting over water or at lights. They roost solitarily among thick leaves of trees or in cavities or buildings.

Threats
As for most bats, Hoary Bats are threatened by the precipitous decline in larger moths due to parasitism by *Compsilura*. Other threats include declines in other prey species, due to insecticide spraying or prey species habitat destruction, and outright destruction of bat habitat, due to conversion to development, intensive logging, or agriculture.

References
Cardoza, J. E., G. S. Jones, and T. W. French. In prep. Distribution and status of bats in Massachusetts, USA.

Whitaker, J. O., Jr., and W. J. Hamilton, Jr. 1998. *Mammals of the Eastern United States*. Third edition. Comstock Publishing Associates, Ithaca, New York.

Beach Vole (***Microtus breweri*****,** not listed)

Species Description

The Beach Vole is an island relative of the common Meadow Vole, *Microtus pennsylvanicus* and has variously been considered a subspecies *(Microtus pennsylvanicus breweri*) or a distinct species. It is said to differ from the Meadow Vole by averaging larger in size being much paler in color, and by having fewer closed triangles in the pattern of the upper molars.

Distribution and Abundance

The Beach Vole is restricted to Muskeget Island which is located 6 miles off the northwest end of Nantucket Island, Nantucket County, Massachusetts. If this population of voles is indeed recognized as a valid species it represents the only vertebrate species endemic to Massachusetts. Muskeget Island is a low sandy island that is only 0.6 square miles in size. This vole is said to have also historically occurred on nearby Adam's Island and South Point Island.

Habitat Description

Muskeget Island is a low, mostly treeless island dominated by grasses with areas of bayberry and beach plum. Poison ivy is abundant over portions of the island. Muskeget historically hosted an extensive tern colony and now supports nesting Herring and Great Black-backed Gulls with a small number of terns nesting on one end along the beach. Muskeget is also the site of the southern most puping site for Gray Seals anywhere in their range. On January 20, 2000, a total of 633 Gray Seal pups were counted on the island.

Threats

Since the highest point on the island is only 15 feet above the high tide line, Beach Voles are vulnerable to any significant rise in seal level and to storm surge. Beach Voles are also known to experience natural population cycles and may be more vulnerable to extinction during periods of population decline. Known predators include Short-eared Owl (state endangered) and Northern Harrier (state threatened).

American Black Bear (*Ursus americanus*, State Not Listed)

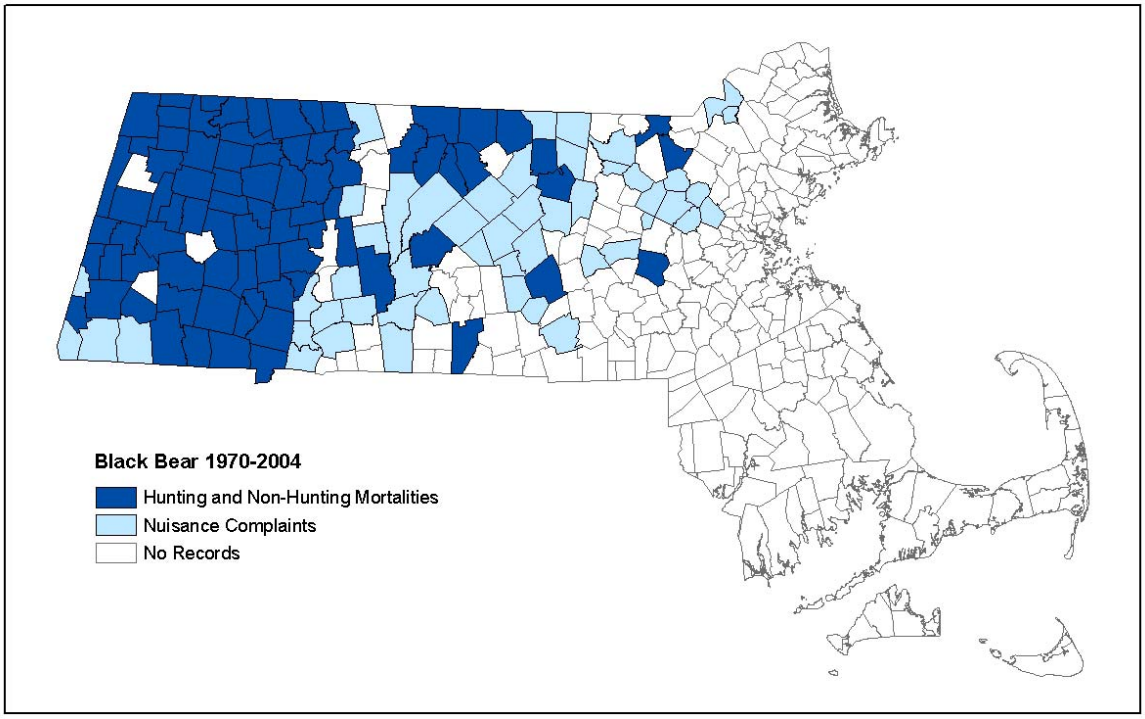
Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G5	S4	Large Unfragmented Landscape Mosaic; Upland Forest	

Species Description.

Black bears are stocky and large-bodied with sturdy legs and flat, 5-clawed feet and coarse, shaggy pelage. Black bears have small eyes, small rounded ears and a short tail. Although they may be brown or cinnamon colored in open western habitats, almost all black bears in eastern deciduous forest are entirely black except for a brown muzzle and occasionally a white chest patch. Black bears range from 100-250 kg for adult males and 50-100 kg for adult females. Body length ranges from 1-2 m.

Distribution and Abundance.

Black bears are found in all towns west of the Connecticut River and are moderately common in the area from the Connecticut River through central and northern Worcester County. Occasional vagrants occur in northeastern Massachusetts. Bears are absent from southeastern Massachusetts. In 1998, there were an estimated 1750-1800 bears in Massachusetts, with the population increasing at about 8% annually.



Massachusetts Towns with Current Occurrences (1970-2004) of Black Bear

Habitat Description.

Black bears are forest animals. However, they have the ability to exploit a wide array of physiographic and vegetative associations. These may vary in climate, soils, and topography, which consequently affect the quantity, quality, and availability of food, which is the primary determinant of black bear home range size, movements, and

habitat use. Suitable black bear habitat is characterized by mature forest interspersed with small opening and tracts of early successional forest. The eastern deciduous forests, with their abundance and variety of foods—including acorns and other nut crops—yield the greatest black bear growth rates. In Massachusetts, wetlands are important to black bears in spring and summer, early successional and berry-producing areas in summer, and hardwood ridges in autumn.

Threats.

Although the black bear is the least threatened of the 8 bear species and is stable or increasing in most of its range, it faces both short-term and long-term threats to its survival. Habitat fragmentation poses a serious risk to species (such as the black bear) with large home ranges and a sexually selected dispersal pattern. The consequent introgression of these large carnivores into human-dominated landscapes poses substantial ecological and conservation challenges. Alterations to bear habitat may degrade or modify the food biomass available to bear and coincidentally induce changes in bears' tolerance to humans, and that of humans to bears. Alterations to landscape mosaics, disruption of climatic cycles, rises in pollutant levels, draining of wetlands and waterways, and the proliferation of anthropogenic food sources will all affect the ability of the landscape to sustain black bears.

Bobcat (*Lynx rufus*, Not Listed)

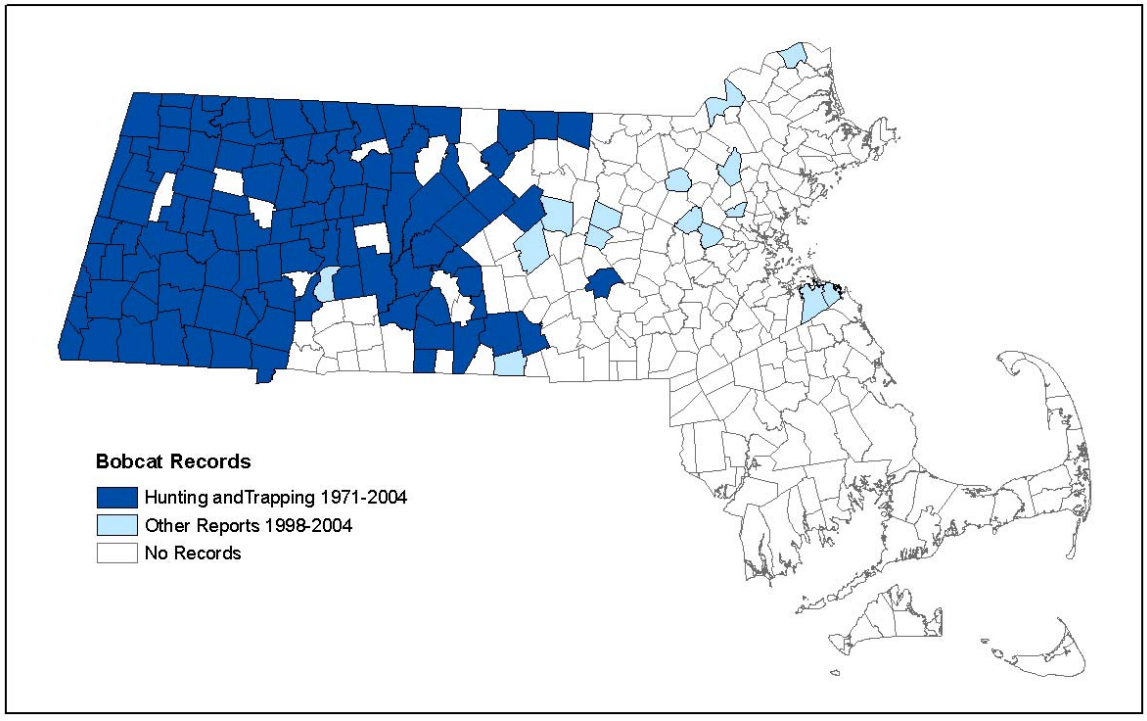
Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G4	S4	Large Unfragmented Forest Mosaic; Upland Forest; Early Successional Forest	

Species Description.

Bobcats are medium-sized feline carnivores with a short tail, tufted ears, a facial ruff, rather small head, and long legs relative to body length. They have short, dense fur occurring in a variety of color patterns, but typically yellowish or reddish on the upper parts and white with black spots underneath. The tail has stripes or bands only on the upper surface. The feet have functional toes with sharp, retractile claws. Adult males weigh 6-18 kg and adult females 4-15 kg.

Distribution and Abundance.

Bobcats are common in western and central Massachusetts, occasional in northeastern Massachusetts, and rare or absent in the southeastern counties. There are no reliable or accurate means of attaining population estimates for bobcats.



Massachusetts Towns with Current Occurrences (1971-2004) of Bobcat

Habitat Description.

In North America, bobcats occupy a wide range of habitats from boreal forests to deserts, and rocky mountains to humid bottomlands. However, they typically prefer rugged country interspersed with dense cover supporting an abundance of medium-sized prey and which allows hunting by ambush or stalking. Typical bobcat habitat in

western Massachusetts includes regenerating forest, small hardwood stands, and other early successional habitats. In winter, bobcat also often selected for cliffs, and dense stands of spruce or hemlock-hardwoods. These choices undoubtedly reflect availability of and access to prey. Dense understory vegetation and rocky ledges are important structural components of bobcat habitat.

Threats.

The key management needs for bobcat include: (1) development and implementation of accurate survey or census techniques, (2) protection or improvements of habitat for bobcat and prey species, (3) refinements in harvest management to better match variations in abundance in space and time, (4) improving public knowledge and support for management options, (5) evaluating the effectiveness and need for federal oversight, and (6) understanding and monitoring the impact of diseases and parasites. Long-term studies are essential to most of these needs.

Harbor Porpoise (***Phocoena phocoem*****,** not listed)

Species Description

The Harbor Porpoise is our smallest cetacean with an average adult size of about 4.5 feet (1.4 m) in length and a weight of about 90 pounds (41 kg). They are small but stout and lack the beak typical of most dolphins. The dorsal fin is low with a broad base and roughly triangular with a slightly concave trailing edge. They are dark gray, almost black dorsally, with a light colored ventral surface. They have 22-28 spatulate-shaped teeth on each side of both jaws. No other New England cetacean has flattened teeth. At sea they appear very small and dark as they slowly roll over at the surface as they breathe. They are typically seen singly or in pairs, but may occasionally travel in small loose groups.

Distribution and Abundance

Harbor Porpoises occur from North Carolina to Greenland. They are relatively common in Massachusetts coastal waters from about March through November but apparently moved off shore during the winter. The entire Gulf of Maine supports an estimated 89,700 individuals but only a small portion of this population uses Massachusetts waters.

Habitat Description

Harbor Porpoises spend most of their time in relatively shallow water, coming into bays and harbors and even into estuaries at the mouths of larger rivers. When offshore, they are usually found over shallow areas such as Georges Bank and Jeffrey's Ledge. They follow schools of herring, mackerel, pollock and squid.

Threats

By far, the greatest threat to Harbor Porpoises off the Massachusetts coast is entanglement in sink gill nets. Between 1990 and 1996 the number of Harbor Porpoises believed to have drowned in sink gill nets within the Gulf of Maine ranged from 1,000 to 3,000 per year. More recent restrictions on the use of this gear in waters under state and federal juridiction have reduced the rate of gear related mortality. Exposure to environmental pollutants such as mercury may also be a threat but contaminant levels have not been adequately documented in our waters.

Moose (*Alces alces, State Not Listed*)

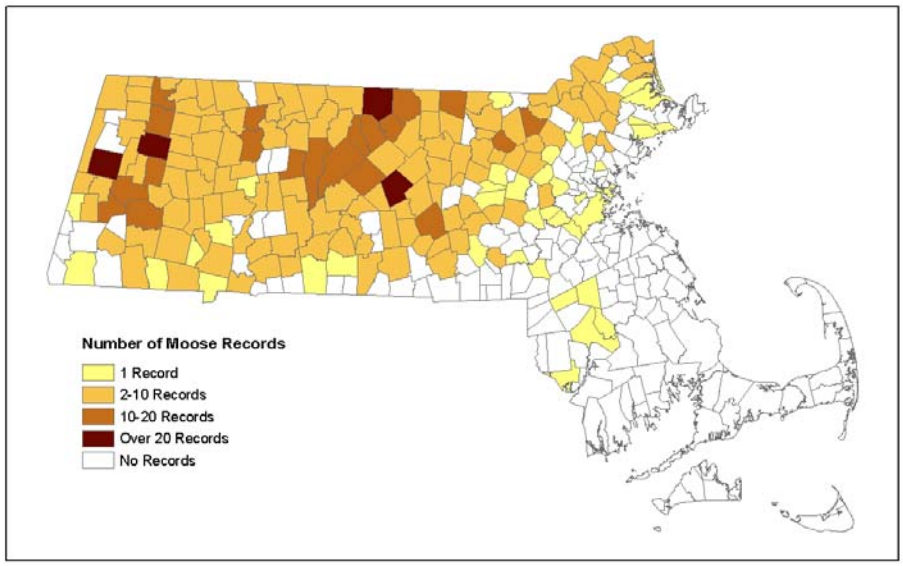
Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G5	S1	Landscape Mosaic	

Species Description

Moose are the largest deer species in Massachusetts. It is described as a dark brown animal with lighter colored legs, high humped shoulders and a distinctive flap of skin protruding beneath the lower jaw. Adult moose weight ranges from 360 to 600 kg for males and 270 to 360 kg for females and body size is 280 cm in length and stand 185 to 195 cm tall at the shoulder.

Distribution and Abundance

Moose are reclaiming their historic range and moving into areas where they have not been seen for hundreds of years. Moose have been documented in 190 of the 351 towns in Massachusetts from 1970 to February 2005. Seventy-one percent of all moose reports have been since 1995. Source of information: Moose database accessed February, 2005.



Massachusetts Towns with Current Occurrences of Moose from 1970 to 2005

Habitat Description

In all areas that have moose populations, moose use a mosaic of habitats for both food and protection. There are seasonal differences in the food intake of moose, but they seek highly nutritious, low toxin foliage and browse. Early successional forests provide important foraging habitat for the moose throughout the year while submerged aquatic vegetation can be utilized during the summer months. Dense conifer stands provide thermal cover during the clear and cold winter months.

Threats

In Massachusetts, moose are at the southern end of the historic range in northern hardwood and eastern broadleaf forest types. Currently, there is little information on the specific habitat requirements for moose in Massachusetts

and the northeast United States. Understanding how these large herbivores use and move throughout the diverse human-dominated landscape of Massachusetts will provide much needed information on future population growth and potential habitat destruction by moose.

New England Cottontail (*Sylvilagus transitionalis*, Not Listed)

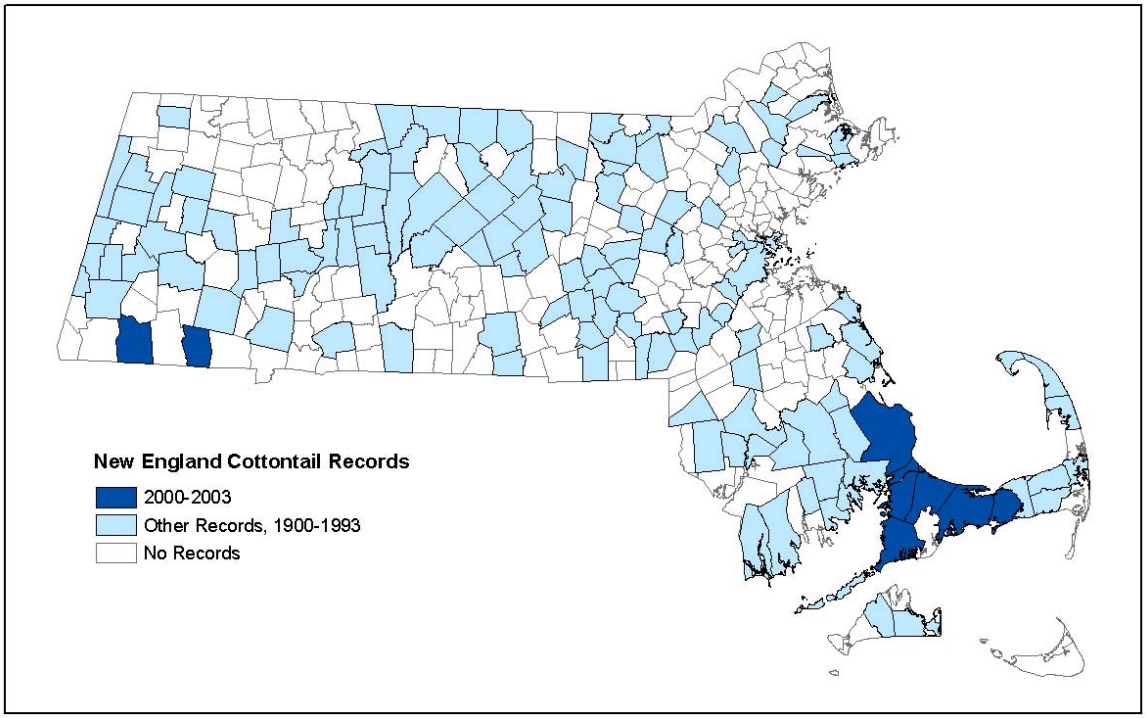
Global Rarity Ranking	State Rarity Ranking	Habitats	Conservation Concern
G4	S4	Early Successional Forests	Candidate for U.S. ESA

Species Description.

The New England cottontail is a medium-sized cottontail rabbit with dark-brown to buffy upper parts overlain with distinct black guard hairs. Its ears are short and rounded, with the anterior portion edged in black, and there is a black spot between the ears. Cranial characters, including an irregular suture between the frontals and nasals, and a long slender postorbital process (rarely touching the skull) can reliably distinguish this cottontail from the eastern cottontail (*S. floridanus*). New England cottontails may weigh 1 kg and measure 390-430 mm in length.

Distribution and Abundance.

The New England cottontail was once found statewide in Massachusetts, including Dukes and Nantucket counties, from which it had vanished by the 1920s. New England cottontails maintained an overall relative abundance of about 22% of all specimens during 4 surveys between 1950-1993. However, in the 1990-93 survey, eastern cottontails were found in 13 of 14 counties, while *S. transitionalis* was found in only 6. In 2000-2003, no New England cottontails were found among 183 specimens received from cooperators. However, small populations were reported in Barnstable County and southern Berkshire County by another researcher.



Massachusetts Towns with Current (2000-2003) and Historical (1900-1993) Occurrences of New England Cottontail

Habitat Description.

The New England cottontail is an early successional or thicket dwelling species. Suitable habitat can be found in both forests and shrublands where there is a dense understory with food and cover in close association. Typical habitats include native shrub associations, beaver flowages, old fields and pastures, and early successional forests. It may also be found in laurel thickets.

Threats.

The widespread loss of early successional habitat types is the proximate threat to the New England cottontail. Residential and commercial development in pitch pine-scrub oak barrens or other early successional communities has also fragmented, degraded, or eradicated habitat for *S. transitionalis*. Fragmentation and diminishment of suitable habitat patches reduces suitable foods, provides less escape cover, and forces New England cottontails to forage at greater distances than in ideal habitat. Increases in generalist carnivores affect both cottontail species; however, eastern cottontails have the ability to forage further from cover and to detect predators at greater distances than do New Englands. New England cottontails may also be unable to compete with and displace the more adaptable eastern cottontail from suitable habitats.